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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

REC'D 30 SEP 2004



WIPO PCT

Applicant's or agent's file reference P2030PC00	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/NO 02/00477	International filing date (day/month/year) 13.12.2002	Priority date (day/month/year) 13.12.2002
International Patent Classification (IPC) or both national classification and IPC E21B43/16		
Applicant STATOIL ASA et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 08.07.2004	Date of completion of this report 29.09.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Diaz y Diaz-Caneja, Telephone No. +49 89 2399-7534 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/NO 02/00477**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

Description, Pages

1-16 as originally filed

Claims, Numbers

1-14 as originally filed

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).
(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-14
	No: Claims	
Inventive step (IS)	Yes: Claims	1-14
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-14
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

- 1) WO 97/12118 discloses a method for increasing oil recovery from a oil reservoir in which method gas is injected into the reservoir, comprising the steps of:
 - separation of air into an oxygen-rich fraction and a nitrogen-rich fraction (see page 12, line 16),
 - providing a natural gas stream and leading the natural gas stream and at least part of the oxygen-rich fraction to a reformer 2 for conversion to synthesis gas mainly comprising H₂, CO, CO₂ and lower amounts of non-converted methane, water vapour and nitrogen (see table 1),
 - formation of higher hydrocarbons from the synthesis gas in a synthesis gas unit (see table 3)

The problem may be regarded as how to reduce the surface tension between gas and oil, and thus to contribute to both increased recovery and stabilisation of the reservoir.

This problem is solved in the known method through the distinguishing features of claim 1, where waste gas and nitrogen-rich gas are injected into the oil reservoir. The prior art, D1, does not disclose the injection of nitrogen into the reservoir to enhance recovery.

The same problem and solution approach applies for method claim 8, and the two corresponding apparatus claims 3 and 10 which include the same distinguishing features .

Since said distinguishing features are neither known nor suggested by the prior art documents the subject-matter of claims 1, 3, 8 and 10 meets the requirements of Art. 33(2)-(4) PCT.

- 2) The applicant should have taken into account the following points:
 1. To satisfy the conciseness requirement of Art. 6 PCT the set of claims should include only the minimum necessary number of independent claims in any one category, with dependent claims as appropriate. Said requirement is not satisfied by claims 1, 3, 8 and 10, as in the present case it is considered appropriate to use only one independent apparatus claim and one independent method claim.

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2. Line 25 in page 15 is not clear since there is no fig. 4 (Art. 6 PCT).
3. The unit bar employed in on pages 7-8 is not recognized in international practice, contrary to the requirements of Rule 10.1(d) PCT.
4. According to the requirements of Rule 11.13(I) PCT reference signs not appearing in the description shall not appear in the drawings, and vice versa. This requirement is not met in view of the reference signs 26 in page 9, and reference signs 14, 25, 13 and 24 in page 10, and reference signs 21, 28 and 29 in figs. 1 and 3.
5. Claims referring back to a single previous independant claim shall be grouped together (R. 6.4(c) PCT). This requirement is not fulfilled by claim 12.
6. Rules 5.1 (a) (ii) PCT reference to the document D1 (WO 97/12118 cited in EP1 004 746 from the search report) and its disclosure.